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ABSTRACT

This report summarizes the findings of a study that was conducted for the National Forum on Information Literacy (NFIL), a group of representatives from 46 national organizations from business, government, and education which share an interest and concern with information literacy. The purpose of this study was to create a comprehensive definition of information literacy and to develop outcome measures for the concept. The National Education Goals of 1990 were used as a framework to demonstrate the critical nature of information literacy for attainment of selected goals. The study employed the Delphi research technique, through which a panel of 56 selected experts were assisted to reach consensus on the definition and the outcomes. This report presents the concise definition of information literacy formulated by the panel--i.e., the ability to access, evaluate, and use information from a variety of sources--as well as a listing of 10 discrete attributes of an information literate person. Of the six National Education Goals of 1990, three that the panel ranked as relevant to the desired outcomes of information literacy are then discussed: (1) all children should start school ready to learn; (2) elementary and secondary school students need to learn how to learn in order to make informed decisions; and (3) adults must be provided with the literacy and other skills necessary for employment and citizenship. It is noted that these goals represent a continuum for lifelong learning, and the panel's recommendations for specific policies at the national, state, and local levels to facilitate these outcomes are listed for each goal. Appendices provide lists of the members of the panel of experts who completed the project, the organizations represented in the study, and the items upon which the panel achieved consensus. (KRN)

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FINAL REPORT TO NATIONAL FORUM ON INFORMATION LITERACY JUNE 24, 1992

SUMMARY OF FINDINGS:

OUTCOME MEASURES FOR INFORMATION LITERACY WITHIN THE NATIONAL EDUCATION GOALS OF 1990

By

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SUMMARY OF FINDINGS

Introduction

Information literacy, first noted as a term in 1974 (Zurkowski, cited in Kuhlthau, 1987), a key concept in today's Information Society, is defined as "the ability to access, evaluate, and use information from a variety of sources" (Doyle, 1992). As the amount of available information grows in geometric proportions, it has become impossible to stay current with general interests much less a specialized subject. A shift in focus is needed from static to process, from accumulation of facts by memorization to proficiency in the skills of information literacy.

Background

From September, 1991 to March, 1992 a study was conducted to (1) create a comprehensive definition of information literacy and (2) develop outcome measures for this concept. The National Education Goals of 1990 were used as a framework to demonstrate the critical nature of information literacy for attainment of selected goals. The intent of this project was to prepare policy recommendations for the National Forum on Information Literacy (NFIL). The next step is for NFIL to consider the Summary of Findings, presented in this paper, as the basis for selected national policy recommendations.

The National Forum on Information Literacy is composed of representatives from 46 national organizations from business, government, and education, all of which share an interest and concern with information literacy. The purpose of the Forum is to develop and disseminate an understanding of the critical importance of this concept.

On September 6, 1991, the proposal for this study was presented at the quarterly meeting of the Forum in Washington, D.C. It met with a positive response, both in moral support and with agreement by representatives present to assist with a list of persons to be contacted for participation. From the respective organizations' membership rosters, representatives selected three to six names of those most knowledgeable in the area of information literacy.

Delphi research technique

Selected persons were invited to participate in a Delphi panel, a research technique aimed at assisting a panel of experts reach consensus on an issue, through a reiterative and structured communications process. Round I had two parts: (1) focus statements dealing with a definition and attributes of information literacy; and (2) evaluation of national goals' relationship to information literacy and possible outcome measures. In subsequent rounds, the development process was based entirely on responses from the panel. Responses were summarized and rated in Round II by each participant. Only those statements with a mean agreement of 1.5 or better, on a five point Likert-type rating system, were included in Round III.

A total of 136 persons were invited to participate. Geographically, they covered the United States, Canada, and Puerto Rico. Organizationally, 18 different associations were involved, with the largest number from the field of education. Initially, 125 persons were mailed a packet including details of the project, background information, and a copy of Round I. Fifty-eight (46.4%) of these were returned completed with agreement to participate. Before Round II was mailed, 11 additional names were added, making a total of 69 packets distributed. Response on this round was made by 56 (81.1%) people. The final round, Round III, was returned by 55 (98.2%) panel members from Round II, a clear indication of participants' interest and involvement in the issue. In each round respondents were encouraged to include comments to further explain or amplify their reactions. These comments add a richness in

interpreting the findings with implications for additional development and implementation of information literacy.

Data analysis

While there were frequency counts in Rounds I and II, the primary techniques were those of qualitative analysis: looking for patterns, searching for themes to group common items, and checking for clusters of similar terms/phrases. The general approach was to gradually collapse the categories until they were as concise as possible while maintaining the intended meaning.

By Round III the entire document used a five point Likert-type rating scale to quantify consensus. There were 124 rated items in Round III. Thirteen dealt with the definition, 21 were subtopics under the goals, and 90 were specific outcome measures. Consensus, a mean of 1.5 or less, a standard deviation of 1, was reached on 11 of 13 statements on the definition, all 21 of the subtopics, and 45 of the 90 outcome measures.

Results and Conclusions

The work of this panel of experts included two major tasks - - developing consensus on a definition of the term information literacy and naming outcome measures for the concept. Through the reiterative, structured communication process, a high level of consensus was reached on both.

Definition: *Information literacy is the ability to access, evaluate, and use information from a variety of sources* -- this represents the basic components of group consensus. This concise statement is expanded by a listing of the discrete attributes of an information literate person.

An information literate person is one who:
- Recognizes the need for information
- Recognizes that accurate and complete information is the basis for intelligent decision-making
- Formulates questions based on information needs
- Identifies potential sources of information
- Develops successful search strategies
- Accesses sources of information including computer-based and other technologies
- Evaluates information
- Organizes information for practical application
- Integrates new information into an existing body of knowledge
- Uses information in critical thinking and problem solving

This expanded definition of attributes highlights the process of information literacy. The attributes progress through the *access, evaluate, and use* order of the concise definition. The attributes are potential rubrics for a checklist of skills comprising the process. This comprehensive definition is a valuable tool that goes beyond an explanatory function into an operational list of the desired outcomes. With these skills comes empowerment because the ability to use information is necessary to making informed decisions throughout a lifetime.

National Education Goals: The National Education Goals of 1990 addressed six areas of needed reform in American education. In considering these six goals in terms of attainment through information literacy, the panel ranked three as relevant. The common theme through all three was lifelong learning. The three national goals are (U. S. Dept. of Education, 1990):

Goal 1 - By the year 2000, all children in America will start school ready to learn.

Goal 3 - By the year 2000, American students will leave grades 4, 8, and 12 having demonstrated competency over challenging subject matter including English, mathematics, science, history, and geography, and every school in America will ensure that all students learn to use their minds well, so that they may be prepared for responsible citizenship, further learning, and productive employment in our modern economy.

Goal 5 - By the year 2000, every adult will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship.

These goals represent a continuum for lifelong learning. Goal 1 stresses the pre-school, formative, affective aspects of developing a value for information. Goal 3, concerned with schooling, points to the attainment of skills necessary for successful living throughout life. Goal 5 addresses the widespread application of skills for employment and citizenship. Since each goal applies to a different age group, outcome measures differ, each must be developmentally appropriate. The work of developing outcome measures was a special challenge to the panel members because it was the first effort of its kind. This study demonstrates that information literacy skills are at the heart of successful attainment of these three goals.

Focus of each goal

Goal 1 calls for all children to start school ready to learn. Respondents agreed this may be interpreted to mean that the key to attainment is having children understand the basic purpose of school, which is to acquire the skills of knowing how to learn, to value information, and to have positive/enthusiastic attitudes. Preschool children learn to value information by watching their parents, a child's first teachers. Other adults, such as preschool teachers, are also role models. The motivation to read and to access information begins with these first role models.

Results indicate that in order for children to start school ready to learn policy must facilitate the following:

- National commitment to the access of information for every American must be developed.
- Community support must be provided through library facilities/community services with information rich resources, both print and non-print.
- Parents must accept their responsibility to develop a value for information through reading to and engaging children in discussions of what has been read.

It may be concluded that parents must value information and be able to demonstrate effective strategies for accessing, evaluating, and using information to their children. Many parents have yet to acquire these skills so that Goal 5, adult literacy, applies to them as learners. The continuum of lifelong learning is really a circle. The present need for resources and skills development for adults affects future generations.

Goal 3 has a critical focus on students learning to use their minds well -- knowing how to learn in order to make informed decisions. During the years of general education (K-12), all students need to learn how to process information as they apply problem solving and critical thinking skills regularly in school and personal areas. To learn these skills requires an active learning format where students process information to meet specific needs at a level that is developmentally appropriate. The inquiry approach is basic to active learning. An information rich environment is needed, with many resources available

including computer-based and other technologies. Teachers will need skills to facilitate resource based learning.

Comments by the panel members supported the concept that teachers are the most critical key to student attainment of information literacy. Because active learning represents a major shift in instructional strategies, a shift not often addressed in teacher preparation, massive staff development must be conducted. Such staff development needs to be ongoing over a period of years as teachers build confidence and develop applications for their own classes. They must become information literate themselves, comfortable with the variety of resources as well as with the process of accessing, evaluating, and using information. Furthermore, assessments that integrate the process of information literacy into meaningful final projects, portfolios, or performances must be developed.

A library/media center stocked with a wide variety of print - non/print resources, was identified as critical to the implementation of information literacy. Staffed with a trained library/media specialist who collaborates with classroom teachers to carry out classroom objectives, the library/media center becomes the hub of a school. Equity of access to resources increases.

Resource sharing between school and community was mentioned frequently, a recognition that rising costs and evolving technologies call for rethinking traditional institutions. The point was made that reference to no/low cost resources was misleading. There are always costs to accessing information. It must be determined at what point payment will be made. This research points to equity of access being guaranteed at the highest possible level (federal, state), rather than penalizing those who cannot pay for opportunities to be knowledgeable.

Implications are that in order for students to become self-motivated, policy must facilitate the following:

- National/state governments must make a commitment to ensure all students have equal and regular access to information by assuring adequate resources at each site.
- State Departments of Education/local school systems will develop and implement a resource based learning curriculum.
  - * Curriculum standards that reflect a resource-based learning approach will be developed.
  - * Ongoing inservices will be conducted to ensure that teachers have the skills necessary to facilitate resource-based learning.
  - * Library/media centers will be recognized as a key to successful implementation of resource-based learning.
- Parental support and participation in their children's learning will be considered integral.
- School goals will assure that information literacy skills are included across all curricular areas, so that all students apply information literacy as they learn the underlying principles of each curricular area.
  - * Sites will develop curricular objectives that include the process of information literacy across all curricular disciplines in the context of basic principles that are inherent to a particular subject area.
  - * Sites will develop curricular assessment methods that include alternative assessment procedures such as projects, portfolios, and performances involving the information literacy process.
  - * The library/media specialist will be an integral part of the instructional program, working in coordination with classroom teachers to carry out the curricular objectives.
- Teachers will implement resource based learning in their classrooms.
  - * A variety of teaching strategies will be used to support students as active learners.
  - * Critical thinking/problem-solving skills will be developed and honed through meaningful activities involving the location and interpretation of information.

* Ongoing demonstrations will be made of how facts learned in classes become woven together to reveal the interrelated patterns of the world.
* Student assessment procedures will be used that include demonstration of the information literacy process, as through portfolios, projects, and performances.
* The library/media center will be viewed as an extension of the classroom.

Goal 5 focuses on adult literacy and possession of skills necessary for employment and citizenship. In terms of information literacy, all Americans need to be lifelong learners, able to access a variety of resources, proficient with various types of technologies, able to evaluate and use information to meet personal and job-related needs. With over 80% of American jobs related to services, information has become the most important commodity in the marketplace Those who can access information will be empowered with the skills to be successful as employees and citizens.

The Secretary's Committee on Achieving Necessary Skills (SCANS) Report, *What work requires of schools*, was issued in the fall of 1991 by the Department of Labor. Included in this document were five competencies basic for all entry level employees. Among them were: technology, (works with a variety of technologies,) and information, (acquires and uses information.) This is a cross-validation of Goal Five's attainment of employable skills through information literacy.

Colleges were recognized as an area that especially needs to address information literacy though no specific outcome measures were suggested. Several respondents commented that this requires immediate attention so that students learn and/or reinforce information processing skills.

Implications are that in order for all Americans to be lifelong learners policy must facilitate the following:

- National/State governments will be actively involved in improving the information literacy of citizens.
- Communities will promote lifelong learning.
- Businesses will promote the acquisition of information literacy skills by all.
- All Americans will be able to seek information to solve problems and make informed decisions.
    * A wide variety of print and non-print resources will be available to all Americans at no/low cost to the public through public libraries, national on-line networks, and shared resources with business and public institutions.
- Colleges will recognize that information literacy skills must be mastered by all college graduates.

Summary

The results of the research have been twofold. One result has been development of a list of specific outcomes for the process of information literacy as part of a comprehensive definition. The second is that panel members reached consensus on 45 outcome measures for information literacy in the context of selected National Education Goals.

These results have received cross-validation through recently published national reports such as the SCANS Report, *What work requires of schools*, November, 1991, as well as the Council of Chief State School Officers' (CCSSO), *Improving student performance through learning technologies*, November, 1991. Public awareness is rapidly increasing as to the need for attainment of the skills of information literacy even though many have not consciously connected the term to the needed skills.

This is an opportune moment for the National Forum on Information Literacy to consider drafting national policy recommendations. The work of this Delphi panel has provided solid material to

concepts. It is important to focus national attention on the critical importance of information literacy in producing lifelong learners, responsible citizens, and wage earners with employable skills.

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PANEL OF EXPERTS
Completing the
INFORMATION LITERACY
OUTCOME MEASURES
PROJECT

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Organizations that are represented in this study:

AAACE	American Association for Adult Continuing Education
AACJC	American Association of Community and Junior Colleges
AASL	American Association of School Librarians
AECT	Association of Educational Communications and Technology
ACRL	Association of College and Research Libraries
ALA	American Library Association
ALISE	Association of Library and Information Science Educators
ANPA	American Newspaper Publishers Association
ASCD	Association for Supervision and Curriculum Development
IMA	International Visual Literacy Association
MSCHE	Middles States Association, Commission on Higher Education
NAIS	National Association of Independent Schools
NASSP	National Association of Secondary School Principals
NSBA	National School Boards Association
NCLIS	National Commission on Library and Information Services
NCTM	National Council Teachers of Mathematics
NFBPA	National Forum for Black Public Administrators
NFIL	National Forum on Information Literacy
NPLL	National Partners for Libraries and Literacy
SHEEO	State Higher Education Executive Officers

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Definition of Information Literacy and Attributes of an Information Literate Person

Definition of information literacy:

Information literacy is the ability to access, evaluate, and use information from a variety of sources.

An information literate person is one who:

• recognizes the need for information
• recognizes that accurate and complete information is basis for intelligent decision-making
• formulates questions based on information needs
• identifies potential sources of information
• develops successful search strategies
• accesses sources of information including computer-based and other technologies
• evaluates information
• organizes information for practical application
• integrates new information into existing body of knowledge
• uses information in critical thinking and problem solving

GOAL 1 OF THE NATIONAL EDUCATION GOALS OF 1990

GOAL 1 By the year 2000, all children in America will start school ready to learn.

- All disadvantaged and disabled children will have access to high quality and developmentally appropriate preschool programs that help prepare children for school.
- Every parent in America will be a child's first teacher and devote time each day helping their child learn; parents will have access to the training and support they need.
- Children will receive the nutrition and health care needed to arrive at school with healthy minds and bodies, and the number of low weight babies will be significantly reduced through enhanced prenatal health systems.

Interpretation of Goal 1 from the Information Literacy Perspective

Parents are a child's first teachers. They provide the most important role models of the value of information to make decisions. In addition, they set an example for motivations to read and to access information.

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National Goal 1 - Outcome Measures

1. National commitment to the access of information for every American must be developed.

Outcome Measures

No consensus.

2. Communities will provide support for preschool children and their families.

Outcome Measures

Every home will have access to information rich resources, both print and non-print, through schools and/or libraries.
Every community will have a library that will be a no cost training center with easy access to a wide variety of information resources, print and non-print.

3. Parents will accept responsibility as a child's first teachers. Time must be taken before formal schooling starts to develop a value for information.

Outcome Measures

Parents will participate in parenting classes that stress the importance of:
engaging children in discussions about materials that have been read (even if just to identify objects on a page)

4. Children will start school valuing information and having positive/ enthusiastic attitudes.

Outcome Measures

No consensus.

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GOAL 3 OF THE NATIONAL EDUCATION GOALS OF 1990

GOAL 3 By the year 2000, American students will leave grades 4, 8, & 12 having demonstrated competency over challenging subject matter including English, mathematics, science, history, and geography, and every school in America will ensure that all students learn to use their minds well, so that they may be prepared for responsible citizenship, further learning, and productive employment in our modern economy.

Interpretation of Goal 3 from the Information Literacy Perspective

The basic focus of education should be to prepare students to be lifelong learners, to know how to learn. Developing the competencies of information literacy requires an active learning process, which represents a paradigm shift for education.

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National Goal 3 - Outcome Measures for National/State Governments, State Departments of Education, Parents, and School Sites

1. National/state governments will ensure that all students have equal and regular access to information by assuring that there are adequate resources at every site.

Outcome Measures

No consensus.

2. State Departments of Education/local school systems will develop and implement a curriculum that stresses a resource-based learning approach.

Outcome Measures

Curriculum standards that reflect a resource-based learning approach will be developed by states and local school districts.
Ongoing inservices will be conducted to ensure that teachers have the skills necessary to facilitate resource-based learning.
Adequate materials will be available for teachers and students at all schools.
Library/media centers will be recognized as a key to successful implementation of resource-based learning.

3. Parental support and participation in their student's learning will be considered integral.

Outcome Measures

Regular interaction between teachers and parents will be sought.

4. School sites will ensure that information literacy skills are included across all curricular areas, so that all students learn the underlying principles of each curricular area while applying information literacy.

Outcome Measures

Sites will develop curricular objectives that include the process of information literacy across all curricular disciplines, as well as those basic principles that are inherent to a particular subject area.
Sites will develop curricular assessment methods that include alternative assessment procedures such as projects, portfolios, and performances involving the information literacy process.
Sites will have available a wide variety of information resources, print and non-print, that students will access.
The library/media specialist will be an integral part of the instructional program, working in coordination with classroom teachers to carry out the curricular objectives.

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5. Teachers will implement a resource-based learning approach in their classrooms.

Outcome Measures

A variety of teaching strategies will be used that support students as active learners.
Learning opportunities will be arranged that utilize group as well as individual settings.
Critical thinking/problem solving skills will be developed and honed through meaningful activities involving the location and interpretation of information.
Ongoing demonstrations will be made of how facts learned in classes become woven together to reveal the interrelated patterns of the world.
Student assessment procedures will be used that include demonstration of the information literacy process, as through portfolios, projects, and performances.
The production of information, eg. visual formats as videotapes, graphics, etc., will be included in curricular objectives.
The library/media center will be viewed as an extention of the classroom.
Teachers will be informed about and use resources outside of the school as appropriate.

National Goal 3 - Outcome Measures for Students

6. Students will demonstrate competency in the process of information literacy in order to become self-motivated, independent learners.

Outcome Measures

Students will:
read with understanding at grade level.
have the ability to access computers and other technologies.
have the ability to identify an information need.
be able to formulate specific questions that focus the information need.
generate a list of various resources that could provide appropriate information.
have the ability to access a variety of information sources including computer-based and other technologies.
compare and contrast the formats, strengths and weaknesses of various sources such as primary sources, textbooks, data bases, indexes, video productions, coverage, and human resources.
select from among a variety of techniques those strategies most appropriate for a particular information search.
know how to learn.
be able to judge information based on internal and external criteria.
automatically question assumptions and have the skills to research alternative answers.
have a willingness to look at and understand various points of view.
be able to make informed decisions
make connections between existing knowledge and new information.
apply problem solving skills regularly in school and personal areas.
use critical thinking skills regularly in school as well as personal areas.
be able to work individually or in groups.
demonstrate flexibility in ideas and attitudes.
develop and refine oral and written communication skills.
choose appropriate resources to support a proposal, debate, argument.
recognize that accurate and complete information is the basis for intelligent decision making.

GOAL 5 OF THE NATIONAL EDUCATION GOALS OF 1990

GOAL 5 By the year 2000, every adult will be literate and will possess the knowledge and skills necessary to complete in a global economy and exercise the rights and responsibilities of citizenship.

- Every major American business will be involved in strengthening the connection between education and work.
- All workers will have the opportunity to acquire the knowledge and skills, from basic to highly technical, needed to adapt to emerging new technologies, work methods, and markets through public and private educational, vocational, technical, workplace, and other programs.
- The number of quality programs, including those at libraries, that are designed to serve more effectively the needs of the growing number of part-time and mid-career students will increase substancially.
- The proportion of college graduates who demonstrate an advanced ability to think critically, communicate effectively, and solve problems will increase substantially.

Interpretation of Goal 5 from the Information Literacy Perspective

All Americans need to be lifelong learners.
The following measures speak both to those adults without information literacy skills as well as to the need to ensure the availability of resources for realizing lifelong learning.

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1. National/State governments will be actively involved in improving the information literacy of citizens.

Outcome Measures

Policies/laws will be developed that support the availability of a wide variety of information resources for all Americans.

2. Communities will promote lifelong learning.

Outcome Measures

Public libraries, stocked with a wide variety of resources to meet information needs, will be available in every community.
Lifelong learning will be encouraged by a variety of adult programs offered by colleges, community services, and public libraries.

3. Businesses will promote the acquisition of information literacy skills by all.

Outcome Measures

Programs to keep job skills updated will be offered as on the job training.

4. All Americans will be able to seek information to solve problems and make informed decisions.

Outcome Measures

A wide variety of print and non-print resources will be available to all Americans at no/low cost to the public through public libraries, national on- line networks, and shared resources with business and public institutions.
The number of persons able to understand and paraphrase information in newspapers will increase.
Voter participation will increase.
The number of persons able to locate city, state, and federal data in telephone directories so as to register to vote, obtain car licenses, and fulfill other basic tasks will increase.
Americans will increasingly recognize that they are part of the global village and have an increased tolerance and appreciation for multi-cultural differences and divergent points of view.

5. Colleges will recognize that information literacy skills must be mastered by all college graduates.

Outcome Measures

No consensus.

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